

**DEPARTMENT OF  
VETERANS AFFAIRS**

**VISN 1**



**ENVIRONMENTAL ASSESSMENT  
Contract VA776-P-0018  
OF THE PROPERTY LOCATED AT**

**White River Junction VAMC  
215 North Main Street  
White River Junction, Vermont**

**October 28, 2009  
Revised November 20, 2009**

**Presented by:**

**ONIX, Inc.  
238 Shafer Road  
Coraopolis, PA 15108**

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>I      EXISTING CONDITIONS .....</b>	<b>2</b>
<b>II     PURPOSE AND NEED FOR PROJECT .....</b>	<b>3</b>
<b>III    PROJECT ALTERNATIVES .....</b>	<b>5</b>
<b>IV    REGULATION RELATED TO PROJECT .....</b>	<b>5</b>
<b>V     AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES .....</b>	<b>7</b>
<b>VI    ENVIRONMENTAL CONSEQUENCES OF NO ACTION ALTERNATIVE .....</b>	<b>13</b>
<b>VII   CUMULATIVE IMPACTS .....</b>	<b>13</b>
<b>VIII  CONCLUSION .....</b>	<b>16</b>
<b>IX    PERSONS PERFORMING THE ASSESSMENT .....</b>	<b>16</b>
<b>X     SOURCES CONTACTED .....</b>	<b>16</b>
<b>XI    GLOSSARY OF TERMS .....</b>	<b>16</b>
<b>XII   LIMITATIONS &amp; RESTRICTIONS.....</b>	<b>17</b>

## APPENDICES

Appendix A	References and Information Sources
Appendix B	Figures
Appendix C	InfoMap Technologies Database Report
Appendix D	Qualifications and Resumes

## **EXECUTIVE SUMMARY**

The Environmental Assessment (EA) implementing the provision of the NEPA (National Environmental Policy Act) was conducted for the property described as White River Junction Veterans Affairs Medical Center, located at 215 North Main Street in White River Junction, Vermont. The site inspection took place on October 19, 2009 and was conducted by Ms. Nancy Nichols, P.E. representing ONIX, Inc.

The assessment followed the guidelines and Scope of Work provided to ONIX, Inc. No assumptions were made in conducting the assessment. The Environmental Assessment was conducted according to National Environmental Policy Act, Title 40 CFR Parts 1500 – 1508; and VA Regulations, Environmental Effects of VA Actions, Title 38 CFR, Part 26 (51 FR 37182, October 20, 1986). This Environmental Assessment (EA) is not to be confused with a Phase I Environmental Assessment or any assessment requiring environmental media sampling and analysis.

The White River Junction VA Medical Center (WRJ VAMC) is responsible for delivery of health care to eligible veterans in Vermont and four neighboring counties in New Hampshire. The WRJ VAMC is located on 64 acres of hillside in the Upper Connecticut River Valley. The facility includes a hospital building, a 47,000 square foot research building, and ambulatory care building and buildings for clinical and administrative support. The Medical Center is a 60-bed acute care facility that provides a full range of primary, secondary, and continuity of care. Clinical services focus on a comprehensive, compassionate continuity of care. Inpatient beds include 43 medical/surgical bed, 7 ICU beds, and 10 psychiatry beds. The hospital has three operating rooms and about 780 employees.

The proposed project is to design and install a Biomass boiler which will be fueled by wood chip and wood waste to provide heat to the facility. There is also an option to install additional equipment in combination with the biomass boiler, which includes an absorption chiller, steam chiller, and an electric cogeneration system. These systems are designed to provide a potentially economical viable option for the energy demands of the facility. The Biomass Boiler will be installed in the vicinity of the current boiler plant. The Environmental Assessment will focus primarily on the impacts of the biomass boiler installation as the proposed project. The additional equipment that can be installed in conjunction with the biomass boiler will have minimal overall impacts.

The findings of the Environmental Assessment have determined that the proposed project will not have a significant impact on the human environment and an environmental impact statement is not required to be prepared.

## **I EXISTING CONDITIONS**

The property is identified as White River Junction VA Medical Center, located at 215 North Main Street in White River Junction, Vermont. The Medical Center is a 60-bed acute care facility that provides general medical, surgical, intermediate and mental health, as well as clinical and long term care.

The main hospital and medical office buildings occupy the central portion of the site. There is employee parking along the northern and eastern developed portions of the campus, and visitor/patient parking to the south (front) of building 1. There is also parking near smaller office buildings in the eastern portion of the campus.

The campus has a total of about 35 buildings located on 64 acres. The seven largest buildings (Building No. 1, 2, 8/8A, 28, 31, 39, and 44) are clustered within the central portion of the site. The footprints of these buildings range in size from about 10,000 to 25,000 square feet.

The existing boiler building (building 2) is located about 50 feet north of the central, main hospital building (building 1). This building is rectangular with dimensions of about 170 feet (east-west) by 50 feet (north-south). The western portion is occupied by three oil-fired steam boilers. The eastern portion is used as warehouse/storage space. The existing boiler building is comprised of concrete slab-on-grade, brick exterior walls, metal truss roof framing, and slate roofing.

There is a fuel oil bunker adjoining building 2 to the north. As reported by Ms. Audette, there are two No. 2 fuel oil tanks in the bunker of 30,000 gallons each, which are single wall steel tanks.

Most of the property is developed with buildings, asphalt-paved parking and access roads. Landscaping between buildings and paved areas consists of grass with occasional deciduous and evergreen trees. The periphery of the campus to the north and east is woodlands.

A site map is included as Appendix B

Adjacent properties include: Interstate highway (US Route 5) is located at the southern property boundary. Properties across US Route 5 to the south include several gasoline service stations (Citco and Lukoil) and an automotive repair facility (Jasmin Auto). At the southwest corner there is also a gasoline service station (Irving). Properties across VA Cutoff Road to the west of the campus include Baker Lumber, Country Kitchen, and AirGas. To the north are a Town building (Police/Fire) and several residences. There are also residences to the east.

## **II PURPOSE AND NEED FOR PROJECT**

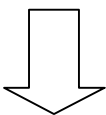
The proposed project is to design and install a Biomass boiler which will be fueled by wood chip and wood waste to provide heat to the facility. There is also an option to install additional equipment in combination with the biomass boiler, which includes an absorption chiller, steam chiller, and an electric cogeneration system. These systems are designed to provide a potentially economical viable option for the energy demands of the facility. In addition, these systems utilize a sustainable fuel source which is economical and vastly available in this part of the country.

The west end of the existing boiler plant (building 2) is the proposed location of the biomass boiler system. The area between the boiler building and adjacent building 8 is planned for storage of wood chips. The wood chips will likely be stored in a storage bin with overhead doors for a floating bed tractor trailer to provide delivery. This area is currently an asphalt-paved access road and adjacent grassy landscaping. There is another option of storing the wood chips inside building 2, depending on the availability of space.

The equipment proposed to be installed in this project is subject to state and federal air emission regulations, and therefore the equipment will be installed with emission control technologies to meet the established regulations which will limit the impact on the environment from its operation. As part of the design process, the location of the equipment, setback from property lines and buildings, as well as aesthetics and noise will be evaluated to limit the impact on the surrounding areas.

### ***Proposed Site Layout With BAMF/CHP Systems***

VAMC White River Junction Aerial View from 670m.



NORTH

### **III PROJECT ALTERNATIVES**

A feasibility study was conducted to analyze the economical benefits of various options of alternative methods to provide heat, cooling, and electricity to the facility.

The options include:

- Biomass boiler only
- Biomass boiler and absorption chiller
- Biomass boiler, steam chiller & electric generator (cogeneration)

The addition of the chiller to the system would require the installation of a new cooling tower, which would increase water consumption and wastewater. The addition of the cogeneration system would increase overall emissions from the system since the overall operation would increase.

Based on the economical and feasibility of available fuel options, it was recommended that the biomass boiler, steam chiller and electric generator was the best option based on net savings, simple payback, and much needed diversity in chilled water and electric supply.

### **IV REGULATION RELATED TO PROJECT**

The Environmental Protection Agency (EPA) Clean Air Act.

The Vermont Department of Environmental Conservation (DEC) Air Pollution Control Division (APCS).

The Vermont DEC has adopted air pollution control regulations that establish limitations on emissions from numerous sources, including biomass boilers and cogeneration systems. The emission limitations are dependant upon the manufacture date of the equipment, the size, fuel type and operating parameters. There are also setback limitations and stack height requirements for the biomass boiler. New regulations were recently adopted to lower the limit of particulate emissions from biomass boilers to 0.32 lb/mmmbtu. Any new equipment installed will have to meet this lower emission limit, which will likely require installing emission control technologies.

The EPA has adopted New Source Performance Standards (NSPS) which dictates specific limitations on the emissions from cogeneration systems and biomass boilers. To meet these emission rates, specific control technologies, monitoring devices, and reporting requirements are necessary.

The Best Available Control Technology (BACT) is required for a cogeneration system and

biomass boiler in order to meet the current emission standards.

The Vermont DEC actively regulates and enforces the NSPS and BACT standards established by the EPA and incorporates these standards in their regulations. Emission testing will likely be required to establish that the installed equipment is meeting the emission limitations. Air Permits for the operation of the new equipment will be required.

Local construction permits would also be required for the installation of this system, building construction or modifications to buildings. However, soil erosion plan and a storm water permit is normally required for any construction activities.

The next step of proceeding with the planned project is to complete a preliminary design, construction plan, and site plan. The design should include the selected equipment type, equipment manufacturer, type and performance of the control technology, and the manufacturer's air emission rates.

Once the design is prepared, then the process of obtaining the appropriate permits can begin.

Local – For local building permits

Town of Hartford, Vermont  
Department of Planning and Development  
Hartford Municipal Building, 2<sup>nd</sup> Floor  
171 Bridge Street  
White River Junction, Vermont 05001  
802-295-3075

<http://www.hartford-vt.org/content/planning/>

State – To assist in evaluating what necessary state permits are required for the project

Vermont Department of Environmental Conservation, District 2 & 3  
Springfield Regional Office  
100 Mineral Street, VT  
802-885-8850

<http://www.anr.state.vt.us/dec/ead/index.htm>

State – To obtain Air Permit for project

Vermont Department of Environmental Conservation  
Air Pollution Control Division  
103 South Main Street, Bldg 3 South  
Waterbury, VT 05671  
802-241-3840

<http://www.anr.state.vt.us/air/Permitting/index.htm>



**V AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES**

a. Soil/Geology

The soil survey completed for Windsor County was reviewed. There is a variety of soil types across the subject property. They include Belgrade silt loam 0-3% slopes (2A), Vershire-Dummerston complex 8-15% and 15-25% slopes (19C) (19D), Glover-Vershire complex 15-25% slopes (20D), Buckland Loam 8-15% and 15-25% slopes, very stony (25C) (25D) (26C), Cabot loam 0-8% slopes (30B), and Urban land-Windsor-Agawan complex 0-8% slopes (32B).

The underlying bedrock in the area beneath the subject property is the Orfordville Formation, post pond volcanics from the Ordovician period of the Paleozoic era. It is described as greenstone, green chloritic schist interbedded with schistose felsite, quartz-feldspar-sericite schist, fine-grained chloritic, and biotitic gneiss.

Some soil excavation may be required for construction activities associated with the project but the impact should be minimal. A soil erosion plan is normally required for any construction activities.

b. Hydrology / Wild and Scenic Rivers

Surface water was not observed on the subject property.

Since there are no wild or scenic rivers located on the subject property, the environmental impact from the proposed project should not affect any wild or scenic rivers.

c. Wetlands

There were no observed on-site wetlands. There is a wetland located to the west of the westerly adjacent properties, and to the west of the VA Cutoff Road.

According to the U.S. Department of the Interior Wetlands survey, this section of the Hanover Quad indicated that the site lies entirely within an uplands area (non-wetlands).

Since there are no wetlands on the subject property, the environmental impact from the proposed project should not affect any wetland areas.

d. Floodplains

The topography slopes downward generally from north to south. In the immediate vicinity of the site, it also slopes generally downward to the west.

According to the Federal Emergency Management Agency (FEMA) flood zone map, Community Panel 50027C0389E, dated September 28, 2007, the subject property is located in Zone X, which is outside the 500-year flood zone.

Based on the topography of site, the potential of flooding is minimal. The proposed project should not have an impact on the floodplains area.

e. Vegetation

Landscaping between buildings and paved areas consists of grass with occasional deciduous and evergreen trees. The periphery of the campus to the north and east is woodlands. Native evergreen and deciduous trees were observed in woodland areas.

Depending on the exact location of the wood chip storage building, some of the grass area adjacent to boiler plant could be eliminated. The proposed project should not have a significant impact on the vegetation.

f. Endangered Species / Wildlife

According to the Federal Land Use database, no threatened, endangered, or candidate species' and/or habitats are located on the subject property or within a one-mile radius of the subject property.

However the Federal Land Use database does report a few species in the county. They are identified as the plant Jesup S Milk-Vetch endangered, the clam Dwarf Wedge Mussel endangered, the mammal Indiana Bat endangered, and the bird Bald Eagle threatened.

None were observed, and none were reported within vicinity of site by site contacts.

Since there are no endangered species on the subject property, the environmental impact from the proposed project should not affect any endangered species. There is a potential for transient species to locate to the property, but the project should not have an affect on these.

g. Unique Farmland

The subject property and surrounding properties are not on prime or unique farmland.

Since the subject property is not identified as unique farmland, the environmental impact from the proposed project should not affect any unique farmland.

h. State or National Park

There are no state or national parks, forests, conservation areas, or other areas of recreational, ecological, scenic, or aesthetic importance located on or within a one-mile radius of the subject property.

Since there are no state or national parks located on the subject property, the environmental impact from the proposed project should not affect any state or national parks.

i. Natural Resources

The natural resources evaluated include timber, soils, minerals, fish, wildlife, water bodies, and aquifers. The subject property is currently developed with multiple buildings, paved roads and parking, and areas of vegetation.

Construction of the system in the proposed project is ultimately dependent on the final design, however there is a potential for building modification, subsurface excavation, and surface grading. There are no surface water bodies or wildlife on the subject property that would be affected. There are minimal natural resources located on the subject property, therefore the environmental impact to them from the proposed project would also be minimal.

j. Aesthetics

The project involves installing new equipment. Depending on the exact size, type and location of the equipment, aesthetics should be taken into consideration. The equipment will likely be installed inside the existing boiler plant or in a newly constructed building. If the biomass boiler is installed, it will require a storage location for the wood chips. It is likely that a storage bin or other similar type building would be constructed to house the wood chips.

If the building locations and design are similar to the existing, aesthetics should not be significantly impacted by the proposed project.

k. Noise

The project involves installing new equipment. Depending on the exact size, type and location of the equipment, noise should be taken into consideration. The equipment will likely be installed inside the existing boiler plant or in a newly constructed building, which will limit the noise impact to the surrounding buildings.

If the equipment is installed inside a building, the noise impact should be minimal. If the equipment is installed on an existing building roof or outside, the noise impact will be greater. Noise from the equipment can be minimized and engineered to pose the least impact to staff and patients. Neighbors are sufficiently distant that with correct muffling, there should be minimal impact to the surrounding areas.

There will be some noise with truck traffic including delivery and unloading of wood chips and disposal of the ash waste. Since there will be a storage building for the wood chips, the truck deliveries will be reduced after the building is filled. For a hospital of this size, we would estimate that normal truck activity to the site would be 5 trucks per day to the loading dock area. The amount of wood chip delivery trucks will vary depending on the size and storage capacity of the storage bin; however it would likely average an increase the truck traffic with one additional truck per day. Removal of the ash from the biomass boiler would be estimated at a one additional truck per week.

Noise limits are determined based on the township regulations, local zoning, distance of source to property line, and hours of operation. The International Building Code 2006 has noise limitations at property boundaries of 65 dBA from 7am-10pm and 50dBA from 10pm-7am. The hospital may have imposed its own noise restrictions based on daily hours or vicinity to sensitive areas of the hospital. Operational procedures can be established to minimize the noise impact from the equipment operation and truck deliveries. Therefore, this project should have minimal environmental impact on noise.

l. Historical Significance

According to the Historic Landmark database, the subject property is not identified as a property of historic, archaeological or architectural significance. However, a number of the buildings on the campus are more than 50 years old and thus, are deemed as

“architectural historical assets” according to Mr. Mulcahy. The boiler building is one of the original buildings, and was reportedly constructed in 1938.

There are historical sites identified in areas around the subject property. The exact distance from the subject property was not available. The historical sites identified are listed below.

- Vermont Division for Historic Preservation, Montpelier, VT
- Progressive market, 63 S. Main St., Hartford, VT
- Jericho Rural Historic District, Hartford, VT
- Taftsville Historic District, Hartford, VT

Some of the structures located on the subject property are architectural historic assets, and therefore this should be taken into consideration if any existing structures are to be modified to accommodate the equipment in the proposed project. The environmental impact of the proposed project should not affect the historical structures located in the surrounding areas.

m. Native American Sacred Sites

There are no American Indian Sacred Sites located on or surrounding the subject property.

The environmental impact from the proposed project should not affect any Native American sacred sites.

n. Minority and Low-Income Populations

There is a hospital located at the subject property, identified as the Veterans Affairs Medical Center. This facility provides medical, surgical, rehabilitative, and social support services. There are no minority or low-income populations residing at the subject property.

Even though there is a potential for minority and low-income populations to reside in the surrounding areas, the proposed project should have minimal to no impacts of their use and consumption of environmental resources.

o. Utilities

Heating of buildings is primarily by central oil-fired steam boilers. Mr. Mulcahy indicated that several buildings near the outer edges of the campus are heated by gas/liquid propane or electric heaters (T-58, T-59, T-60, and T-63 only).

There is cooling of a number of the buildings by several chillers, as well as split system roof-top units. Not all building or portions of buildings are cooled. A portion of the boiler building is cooled reportedly by chiller water from the nearby hospital.

Mr. Mulcahy indicated that campus buildings are served by municipal water and sewer.

Mr. Mulcahy indicated that there are no water supply wells on the campus. We observed no evidence of water supply wells in the vicinity of the boiler building.

The proposed project is to install a biomass boiler and cogeneration system. The boilers will provide heat to the facility and the cogeneration system will provide electric power. These will supplement and/or replace the existing sources. The project will impact the utilities by changing the source of heat and/or power.

p. Solid Waste

Solid waste is removed by a private contractor – Northwest Waste. For a hospital of this size, we would estimate that one to three 40 yard dumpsters would be removed from the site every two days.

Ash is a byproduct of the biomass boiler, which will have to be properly disposed of in accordance with the local and State Environmental Regulations. The normal ash production would be estimated to be 10% of the amount of wood chips burned. This would likely increase the waste removal only by one dumpster per week. The environmental impact from the proposed project should not significantly affect the solid waste.

q. Aviation/Radar/Towers

The property is not located within a flight path, and there are no obstructions that affect domestic aeronautical charting.

The environmental impact from the proposed project should not affect any aviation, radar or towers.

r. Environmental Permits

A July 5, 2006 Air Pollution Control Permit to Operate was issued for the campus for the following equipment: Keeler boiler, two Titusville boilers, and five various emergency generators.

Mr. Mulcahy also reported that there is a Spill Prevention, Control, and Countermeasure Plan for the campus. He reported that there is no sewer discharge permit for the Town.

Ms Audette reported that there was one spill of fuel oil on the campus since she started working on the campus about 1-1/2 years ago. This spill occurred during filling of tank associated with boiler building. Approximately 6 gallons was spilled and cleaned up by campus staff. Mr. Mulcahy and Ms. Audette reported that they were aware of no other spills.

According to the database report, a number of spills were reported on the subject property between 1995-2008. They were all small spills that were cleaned up in accordance with the state regulations.

On-site tanks (about 40) were reportedly inspected in May of 2006. Based on a summary table from the inspection report, they contain diesel & oil, No. 2 fuel oil, gasoline (1-300 gal), transformer oil, grease, and used oil; they include four underground storage tanks, in size ranging from 1,200 to 20,000 gallons.

## **VI ENVIRONMENTAL CONSEQUENCES OF NO ACTION ALTERNATIVE**

The no action alternative would be to maintain the operation of the existing boilers, which operate with No. 2 fuel oil and continue to purchase electricity from the local utility company.

The environmental consequences of the no action alternative would be the following:

- Continued use of fuel oil, which has future increased cost and availability limitations. This is also not a sustainable fuel source.
- Operation of older boilers, which do not have the new emission control technologies installed.
- Utilizing electricity from the local utility company continues the use of the fossil fuels that they use to generate the power.
- Generating power on-site can provide the facility with its own sustainable resource. This reduces the overall demand from the local utility company, especially during peak demand times of the day and year.

## **VII CUMULATIVE IMPACTS**

Federal and State environmental regulations require permits for operation, emission

monitoring and testing, emission control technologies, recordkeeping and reporting requirements, and operation and maintenance requirements.

Impacts from the project include activities associated with the construction and installation, proper operation and maintenance of the equipment, new control technologies, adequate training of the staff, installation of wood storage building, waste disposal of ash, and modification of connections to existing utilities.

**TABLE A - Estimated fuel usage comparison**

<b>Description</b>	<b>Fuel oil consumption</b>	<b>Wood Chip consumption</b>	<b>Ash produced</b>	<b>Electric Usage</b>
	(gallons/yr)	(tons/yr)	(ton/yr)	(kwh/yr)
Existing Boilers operating #2 oil	524,000	0	0	11,730,400
Biomass boiler wood chips	104,800	7,203	720	11,730,400
Biomass boiler & absorption chiller	104,800	8,064	806	11,333,334
Biomass boiler, steam chiller & electric generator	104,800	8,515	852	10,290,507

Note: Reference quantities in Biomass Feasibility report summary table, ash produced based on 10% estimate, assume fuel oil may still be used to supplement biomass boiler system by 20%

**TABLE B - Estimated Emissions in tons/yr**

<b>Description</b>	<b>CO</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>TSP**</b>	<b>VOC</b>	<b>PM-10</b>
Existing Boilers operating on #2 oil*	1.31	5.24	18.60	0.52	0.09	0.52
Biomass boiler wood chips	7.35	8.08	0.92	11.76	0.73	9.18
Biomass boiler & absorption chiller	8.23	9.05	1.03	13.16	0.82	10.28
Biomass boiler, steam chiller & electric generator	8.69	9.55	1.09	13.90	0.87	10.86

Note: Biomass boiler calculations based on published emission rates used in the Biomass Feasibility report and estimated wood chip consumption

\*Calculations based on actual annual fuel consumption and EPA AP-42 emission factors

\*\*TSP based on EPA Phase 2 emission limit for particulates of 0.32 lb/mmBtu for biomass boilers



**TABLE C – Estimated Green house gas emissions**

<b>Description</b>	<b>Fuel Oil Consumption (gal/yr)</b>	<b>CO<sub>2</sub> Oil (tons/yr)</b>	<b>Wood Chip Consumption (tons/yr)</b>	<b>CO<sub>2</sub> Wood (tons/yr)</b>	<b>Total CO<sub>2</sub> (tons/yr)</b>
Existing Boilers operating on #2 oil*	524,000	5,843	0	0	5,843
Biomass boiler wood chips	104,800	1,169	7,208	11,518	12,686
Biomass boiler & absorption chiller	104,800	1,169	8,064	12,894	14,063
Biomass boiler, steam chiller & electric generator	104,800	1,169	8,515	13,615	14,784

\*Calculations based on actual annual fuel consumption and EPA AP-42 emission factors

Replacement of fuel oil with biomass fuel generated steam will result in a significant increase in CO<sub>2</sub> emissions. However, please note in considering this increase the comment in **AP -42 Emission Factors, 1.6 Wood Residue Combustion in Boilers**, 1.6.3.2 Green house Gases, pertaining to emissions from wood combustion (underline added for emphasis):

“Carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) emissions are all produced during wood residue combustion. Nearly all of the fuel carbon (99 percent) in wood residue is converted to CO<sub>2</sub> during the combustion process. This conversion is relatively independent of firing configuration. Although the formation of CO acts to reduce CO<sub>2</sub> emissions, the amount of CO produced is insignificant compared to the amount of CO<sub>2</sub> produced. The majority of the fuel carbon not converted to CO<sub>2</sub>, due to incomplete combustion, is entrained in the bottom ash. CO<sub>2</sub> emitted from this source is generally not counted as greenhouse gas emissions because it is considered part of the short -term CO<sub>2</sub> cycle of the biosphere.”

Estimated emissions from the installation of the biomass boiler would decrease SO<sub>2</sub>, but will likely increase CO, VOC, NO<sub>x</sub>, and particulates. However, the facility would remain below the threshold limits of being a major source. It should be noted that AP-42 factors are industry estimated emission rates and not necessarily the actual emissions from the existing boilers. Depending on the emission control technologies for the biomass boiler, these estimated emissions have the potential to be lower.

## **VIII CONCLUSION**

Based on the available information, the proposed project will not have a significant effect on the human environment and therefore an environmental impact statement is not required to be prepared.

## **IX PERSONS PERFORMING THE ASSESSMENT**

Nancy J. Nichols, P.E., LEEP AP, ONIX, Inc.

Tricia L. Romano, P.E., LEED AP, ONIX, Inc.

Robert N. Roop, P.E., CBIE, ONIX, Inc.

## **X SOURCES CONTACTED**

Matt Mulcahy, Facility Chief, WRJ VAMC

Kelly Audette, Environment, WRJ VAMC

Robert Kennedy, P.E., CEM, Energy Manger, Togus/WRJ/Manchester VAMC

According to the site representative, a notice of the proposed project was published in the local newspaper. To date there have been no “interested parties” identified that have expressed interest in the project.

## **XI GLOSSARY OF TERMS**

Cogeneration – the simultaneous production of three useful energy streams such as electricity, steam and chilled water from a single energy input.

Biomass Boiler – A boiler fueled by carbon-based organic matter, which is available on a renewable basis. Common forms of biomass include forest and mill residue, agricultural crops and waste, wood and wood waste, fast-growing trees and plants, and industrial waste.

The federal, state and local environmental databases that were reviewed are included in

Appendix C. There is a glossary of the databases and sources included in this appendix.

## **XII LIMITATIONS & RESTRICTIONS**

1. The purpose of this Report was to evaluate the potentially affected environments associated with the property and surrounding properties and the potential environmental impacts of the proposed project. No attempt was made to determine the compliance of present or former owner or occupants of the property with Federal, State or local environmental or land use laws and regulations except as noted in this Report.
2. This report focuses exclusively on the impacts of the proposed project on the environment. It does not address feasibility of the project, social, economic, or political impacts.
3. The information herein has been obtained from ONIX, Inc.'s property inspection, review of public records, available databases and maps, and review of the proposed project description. ONIX, Inc. does not guarantee the completeness or accuracy of such information.
4. The information provided in this EA is in part based on *visual* evidence available during a diligent site walk of the entire property and on inspection of all accessible areas within and around the structure. This assessment is limited in nature and should not be inferred to be a guarantee with regard to the presence or absence of any known or unknown hazardous materials on the site.
5. We inspected all of the exterior portions of the property. We do not render an opinion on uninspected portions of the facility. We did not inspect the following areas:
  - The majority of the property was inspected from a vehicle on access roads and in parking area
  - Interior of all of the buildings, with the exception of the boiler building
6. This Environmental Assessment Report has been prepared for the exclusive use of the **Department of Veterans Affairs**. The work has been undertaken and performed in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made. It is our understanding and intention that the contents of this report

be used to assess the potential environmental concerns associated with the property and structure located at **215 North Main Street, White River Junction, Vermont.**

7. The information, observations, and conclusions described in this report are valid on the date of the investigation and have been made under the terms, conditions, limitations, and constraints noted in the report. We prepared the report for the exclusive use of **Department of Veterans Affairs**. No other individual or party shall be entitled to rely upon the report without our express written consent. If another individual or party relies on the report, such individual or party shall indemnify and hold ONIX, Inc. harmless for any damages, losses, or expenses incurred as a result of such use. Any use or reliance of the report by an individual or party other than **Department of Veterans Affairs** shall constitute acceptance of these terms and conditions. Any electronic copies of this report that are provided to **Department of Veterans Affairs** are for the convenience of **Department of Veterans Affairs** and are not to be construed as the original or final report. The work has been undertaken and performed in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made.

THIS REPORT IS DATED THIS 28th DAY OF OCTOBER 2009 AND IS SIGNED BY  
INDIVIDUALS WHO ARE DULY AUTHORIZED TO DO SO.

Report prepared under the direct supervision of and approved



By: \_\_\_\_\_

Robert N. Roop, P.E.

Investigation performed and report prepared



By: \_\_\_\_\_

Tricia L. Romano, P.E.

## **APPENDIX A**

### **REFERENCES AND INFORMATION SOURCES**

InfoMap Technologies Inc., Environmental FirstSearch Database Report

Flood Insurance Rate Map (FIRM) –Community Panel 50027C0389E, dated September 28, 2007

Wetlands Map – US Dept of the Interior, Fish & Wildlife Service

Geologic Map of Vermont

USDA, NRCS, Soil Survey Map of Windsor County, Vermont

Biomass and CHP Assessment, prepared by ONIX, Inc., dated January 12, 2009

The Environmental Protection Agency (EPA) Clean Air Act

The Vermont Department of Environmental Conservation (DEC) Air Pollution Control Division (APCS)

WRJ VAMC, Plan entitled “Annual Real Property Survey”, dated 1979

WRJ VAMC, Plan entitled “Campus Map for Department of Veteran’s Affairs Medical Center,” dated Sept. 2008

WRJ VAMC, Air Pollution Control Permit to Operate, July 5, 2006

## **APPENDIX B**

### **Figures**

## **APPENDIX C**

### **Environmental FirstSearch Database Report**



## **APPENDIX D**

### **Qualifications and Resumes**

## **ROBERT N. ROOP, P.E., B.I.E.**

Comprehensive investigations of site, mechanical, electrical, structural, roofing, life safety systems and environmental conditions of property and buildings including homes. Investigations include environmental assessments and indoor air quality evaluations. Building condition assessments, facility inspections, forensic investigations, and HVAC design. Design of heating/cooling systems and utility distribution networks for hospitals and conduct Life Safety Code compliance inspections for their accreditation. Comprehensive environmental investigations and remediation at former industrial sites to allow their use for residential development. Planned and directed the worker health and safety program for remediation of a hazardous waste site to allow construction of a regional concert facility. Conducted applied research and product development in water and waste water disinfection. Developed several state of the art chemical feed and analytical instruments widely used in public water supply systems. Holds several United States patents in water disinfection equipment.

Licensed professional engineer in New Jersey, Pennsylvania, Delaware, New York, Connecticut, and Massachusetts. Trained and certified at the supervisory level for work at hazardous materials sites. Bachelor of Science in Mechanical Engineering from Tufts University and a Master of Science in Environmental Engineering from Villanova University. Member of the National Society of Professional Engineers, currently president of the Bucks County chapter. Active member of the American Society for Healthcare Engineering, National Academy of Building Inspection Engineers, National Fire Protection Association, American Society of Heating, Refrigeration, and Air Conditioning Engineers, and a member of several other organizations important in the inspection and design of buildings and their systems.

4/01-present, ONIX, Inc. team, Responsible for environmental operations, investigations, and design for residential, commercial, and institutional clients.

11/87 – 4/01, GHR CONSULTING SERVICES, INC., Horsham, PA, Vice President and President Responsible for day to day operations, planning, marketing, and technical content all investigations and designs. Instituted comprehensive quality assurance and health and safety programs. Expanded environmental site investigation services to include building condition assessments and preparation of Statement of Conditions with Plan for Improvement for healthcare clients

8/86 - 10/87, HUNTERDON POWER DEVELOPMENT, Lambertville, NJ, Consultant, Calculation of heat and electric process loads to determine potential for economic application of cogeneration to large energy consumers.

11/85 - 7/86, PRINCETON COMBUSTION RESEARCH LABORATORIES, INC., Princeton, NJ, Sr. Development Engineer, In principal charge of process and mechanical design of combustion research facilities; design of high pressure gas storage, flow measuring, and distribution system to ASME code including compression/expansion, thermal effects, combustion calculations, etc.

11/80 - 8/85, RESEARCH COTTRELL, INC., Somerville, NJ, Manager, New Business Development, Provide senior management with technical and economic evaluation of new process technologies for acquisition, license, etc.; Product Marketing Manager, Flue Gas Desulphurization & Fabric Filtration, Responsible for product/process development applications and marketing of dry and wet flue gas desulphurization and fabric filter products line.

10/72 - 10/80, FISCHER & PORTER COMPANY, Warminster, PA, Sr. Business Manager, Environmental Products, Technical and management responsibility for Product Research & Development activities as well as for marketing of those products; Manager, Environmental Instrumentation Development, In principal charge with technical and management responsibility for engineering staff of 24 conducting research and product development; Development Engineer, Sr. Development Engineer, Mechanical design of instruments and chemical feed equipment.

3/70 - 4/72, METAL MANUFACTURERS LTD., Port Kembla, NSW, Australia, Project Engineer, Several project assignments in capital equipment design, selection, installation and startup including installation of first exotic alloy wire manufacturing plant in southern hemisphere.

6/69 – 3/70, UNITED STATES STEEL CORPORATION, Fairless Hills, PA, Engineering Management Trainee, Technical supervision of mechanical trades and crafts in maintenance of steel mill utility system.

**PROFESSIONAL CERTIFICATION:** Professional Engineer registration in NJ, PA, MA, CT, NY, DE; NJDEP Radon Measurement Technician; 40 Hour Hazardous Waste Training, OSHA Standard 1910.120; New Jersey Certification: Underground Storage Tanks – All; Delaware Certification: Underground Storage Tanks; Building Inspection Engineers Certification Institute

**PROFESSIONAL AFFILIATIONS:** National Society of Professional Engineers; National Academy of Building Inspection Engineers; Healthcare Facility Management Society of New Jersey– Advocacy Chairman; Healthcare Facility Managers Association of Delaware Valley– Advocacy Chairman; American Society for Healthcare Engineering; American Society of Heating, Refrigeration and Air Conditioning Engineers; National Fire Protection Association; The National Council of Examiners for Engineering and Surveying; American Society of Mechanical Engineers

## **PROFESSIONAL QUALIFICATIONS AND EXPERIENCE**

**TRICIA L. ROMANO, P.E., LEED A.P.**

### **Area of expertise**

Ms. Romano is responsible for conducting engineering investigations. Investigations include home inspections, commercial property condition assessments, new construction building inspections and environmental assessments. These inspections include the evaluation of the structure, mechanical and electrical systems of buildings. She also provides analysis of site conditions and recommendations of design improvements.

### **Qualifications**

Ms. Romano has 10 years of engineering experience specializing in evaluation, inspection, and analysis of building condition assessments and environmental investigations. She has performed third party construction inspections on single -family houses and mid-rise condominiums. With the ability to identify construction deficiencies and recommend corrections, she has worked in conjunction construction managers to implement quality construction practices. She has evaluated the condition of the various systems in buildings, prepared maintenance plans and cost estimates for repairs, and provided recommendations for improvements.

She has conducted regulatory compliance evaluations of various commercial and industrial facilities to provide professional consulting to the facilities to ensure they abide with the complex environmental regulations. She has experience in the design, installation, operation, maintenance, and system performance evaluation of remediation and mechanical systems. She has performed indoor air quality analysis and risk assessments related to groundwater investigations and building safety. Previously, she had multiple responsibilities including health and safety officer assuring a safe work environment for personnel, field supervisor of construction and remediation activities, and technician maintaining optimal efficiency and calibration of field and laboratory equipment.

### **Education, Certification, & Affiliations**

Licensed Professional Engineer in New Jersey and Pennsylvania  
NJ Licensed Home Inspector  
LEED Accredited Professional  
Bachelor of Science in Engineering from Hofstra University  
40 Hour Hazardous Waste Training, OSHA Standard 29 CFR 1910.120  
Certified Radon Measurement Technician in New Jersey  
National Society of Professional Engineers, Bucks County Secretary